



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,932	12/08/2003	Toshimitsu Konuma	0756-7221	9654
31780	7590	08/09/2005	EXAMINER	
ERIC ROBINSON			NGO, HUYEN LE	
PMB 955			ART UNIT	
21010 SOUTHBANK ST.			PAPER NUMBER	
POTOMAC FALLS, VA 20165			2871	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/728,932	KONUMA, TOSHIMITSU	
	Examiner	Art Unit	
	Julie-Huyen L. Ngo	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 5, 2005 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanemoto et al. (US5250214A) in view of Nito et al. (US5214523).

With respect to claims 6, 10-12, 16, 17, 21 and 22, Kanemoto et al. teach (Fig. 2) forming a display device comprising:

- a pair of substrates 11/21;
- a liquid crystal layer 15 provided between said pair of substrates and comprising a nematic liquid crystal having positive dielectric anisotropy (col. 5 lines 52-56);

- a pair of orientation films 13/23 provided over adjacent to (near to) and between said pair of substrates respectively;

wherein

- said orientation films have a surface tension of 40 dyne/cm or more (col. 26 lines 61-66);

(Claims 7, 13 and 18)

- each of said orientation films comprises a polyimide.

(Claims 9, 15 and 20)

- a first electrode provided over one of said substrates; and a second electrode provided over the other of said substrates .

(Claims 8, 14 and 19)

- It is well known in the art for a display device to function as a reflective –type display device with a reflection layer on surface of lower substrate for reflecting ambient light

However, Kanemoto et al. and conventional art fail to disclose a display device having spacing between the substrates being less than 3.5 μm .

Nito et al teach (col. 4, lines 6-18) forming a display device having spacing between the pair of substrates being less than 3.5 μm , prefer in the range of 1.6 to 2.7 μm , for obtaining a monostability of the liquid crystal molecules in order to provide for application of a high electrical field and to assure sufficient light transmittance. Nito

further teach that the liquid crystal cell with the cell gap of not more than 3 μm exhibited satisfactory orientation of the liquid crystal molecules and was free of twist.

Nito et al also teach (col. 10, lines 25-65) rubbing a pair of orientation films with antiparallel orientation directions to each other for orienting liquid crystal in a monostable state or cell. Doing so would further enhancing a device with application of high electrical field and assuring of sufficient light transmittance.

Therefore, it would have been obvious for one having ordinary skill in the art to modify Kanemoto et al. display device with the space between the substrates being less than 3.5 μm for obtaining a monostability of the liquid crystal molecules in order to provide for application of a high electrical field and to assure sufficient light transmittance, as taught by Nito et al.

Conclusion

Nakura et al (US 4879144 A) disclose a liquid crystal element comprises a cell structure where a liquid crystal is disposed between a pair of electrode substrates, the distance between the electrode substrates was 2 μm and the direction of rubbing treatment applied to the upper and lower electrode substrates was parallel to the corresponding orientation treating axis.

Yamazaki et al (US 4986638 A) disclose a liquid crystal electro-optical device having a distance between the substrates about 3 microns for having the length of each micro-domain becomes short. Such a narrow distance between the substrates allows the liquid crystal helices to unwind, and therefore the response speed becomes

Art Unit: 2871

as fast as 10 microseconds when measured in the same condition as the case of a distance between the substrates about 20 microns.

Konuma (US 5305127 A) disclose a ferroelectric liquid crystal device with an AC electric field producing a helical structure and/or color control and a method of narrowing a gap of the substrates or applying strong electric field to the ferroelectric liquid crystal.


Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie-Huyen L. Ngo whose telephone number is (571) 272-2295. The Examiner can normally be reached on T-Friday.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. Robert H. Kim can be reached at (571) 272-2293.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1562.

August 6, 2005



Julie-Huyen L. Ngo
Primary Examiner
Art Unit 2871